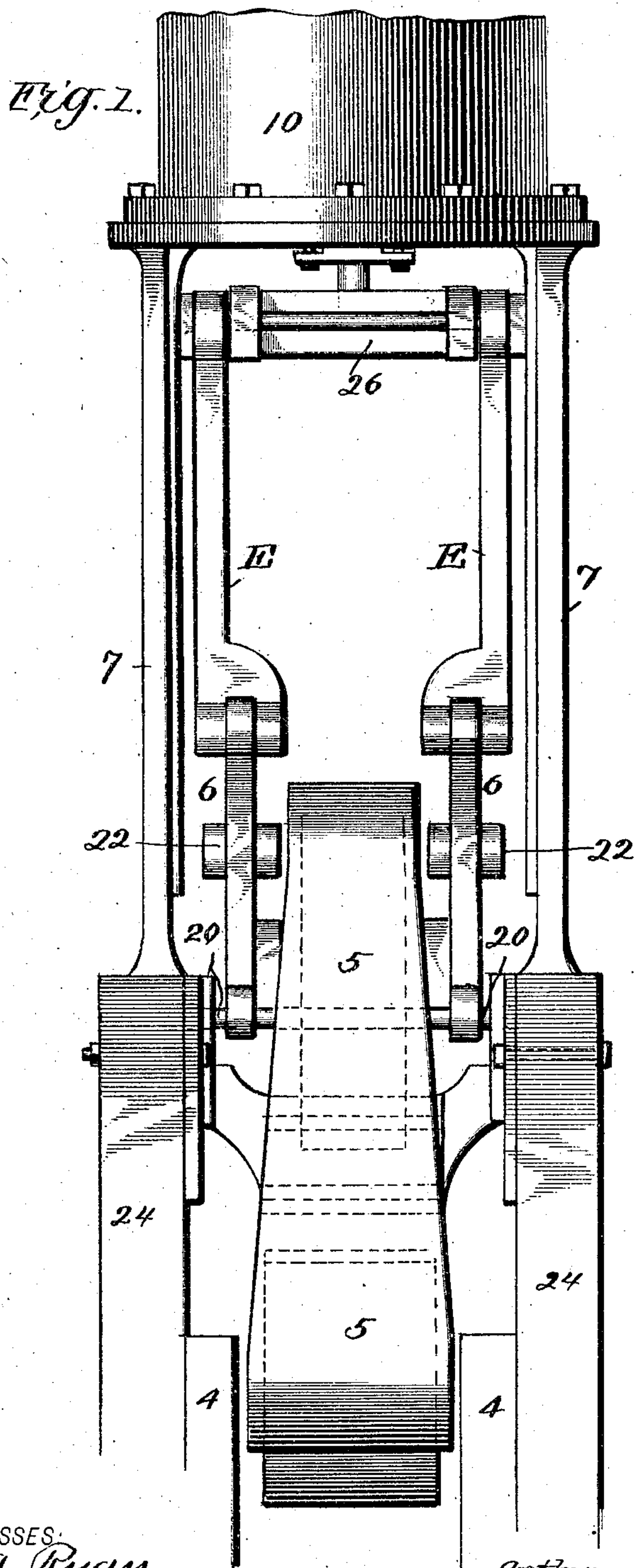


No. 785,383.

PATENTED MAR. 21, 1905.

A. T. SNODGRASS.
COTTON COMPRESSOR.
APPLICATION FILED FEB. 9, 1903.

3 SHEETS—SHEET 1.



WITNESSES:
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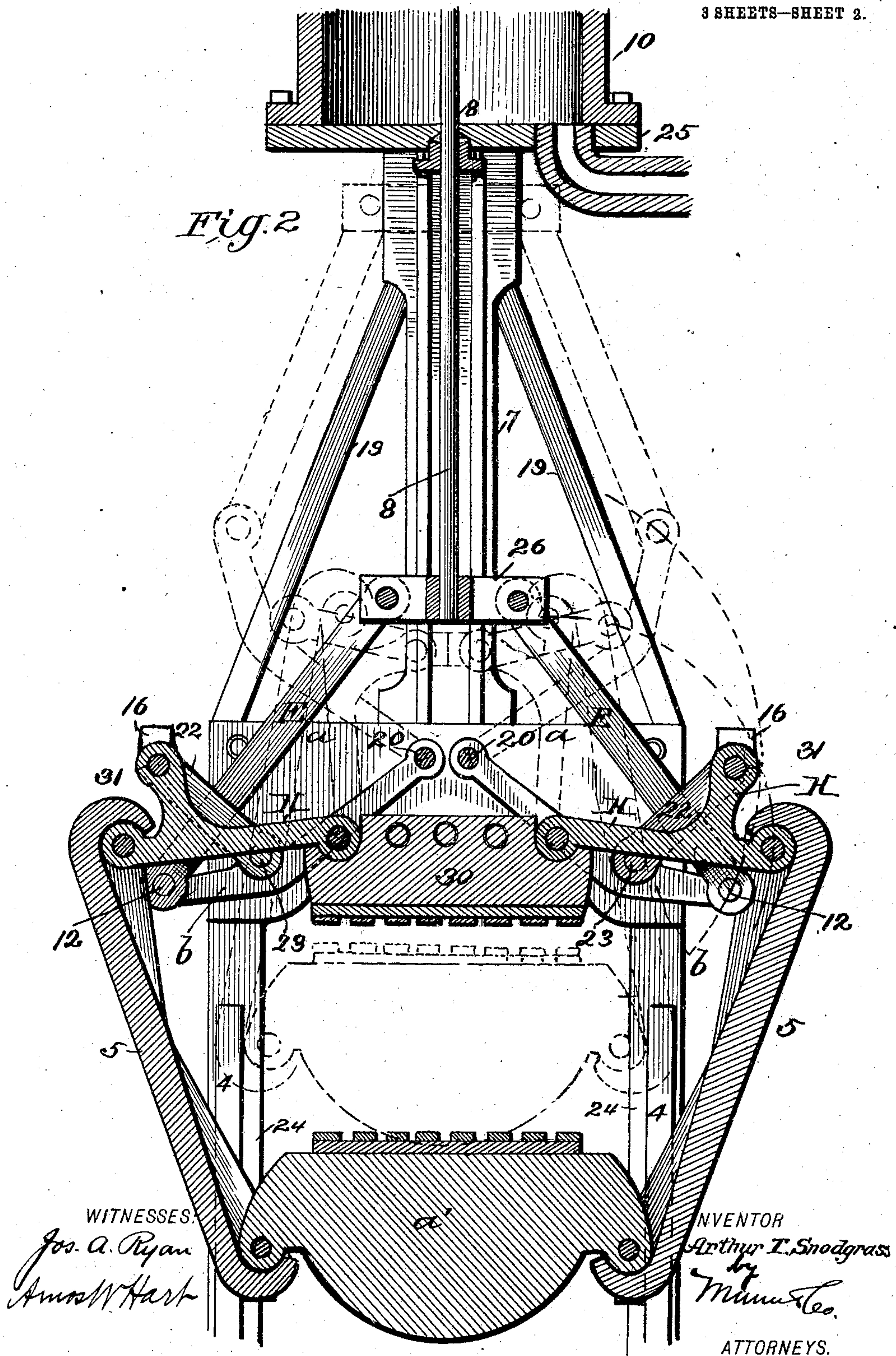
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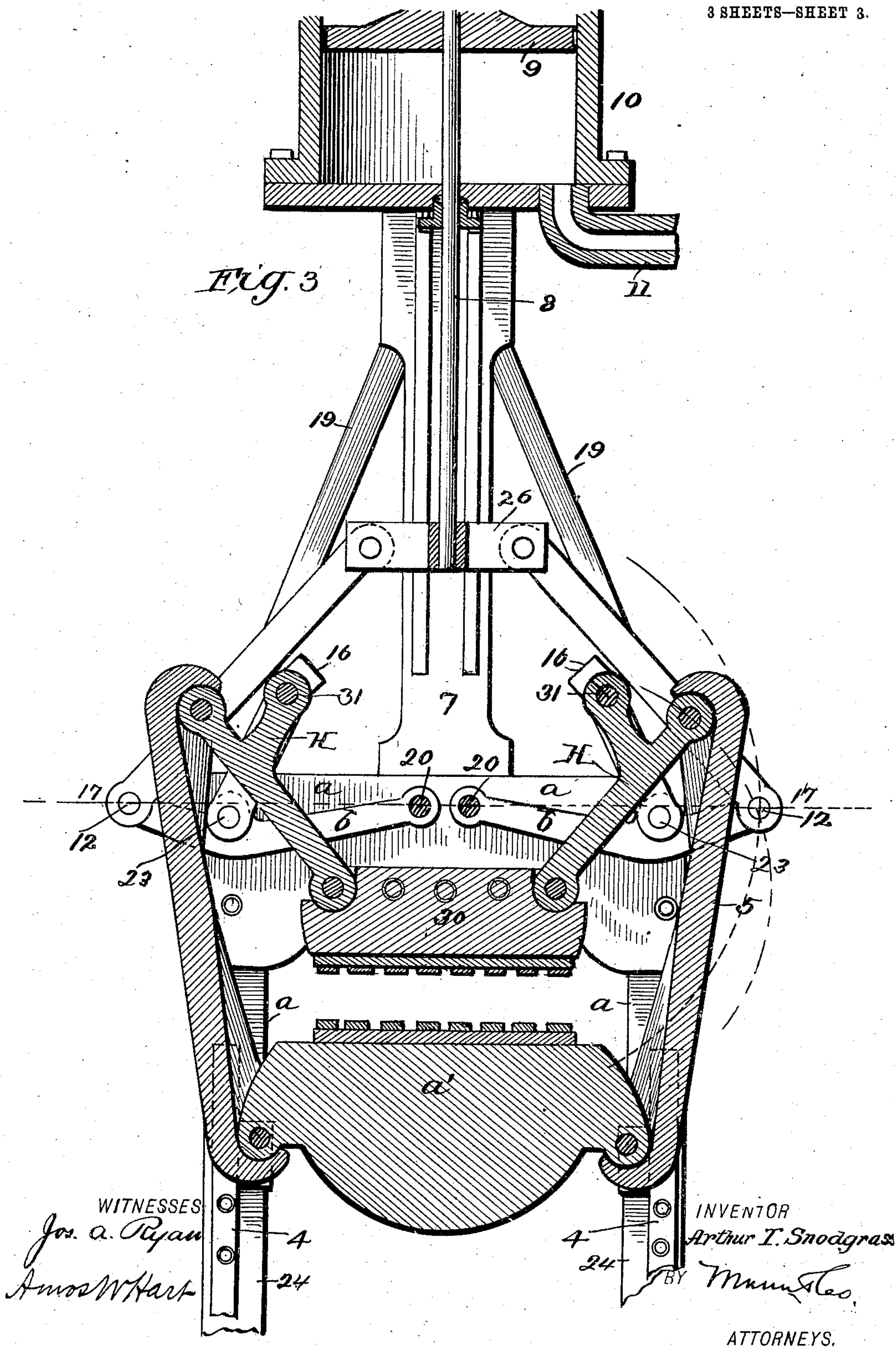


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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

ARTHUR T. SNODGRASS, OF PATTERSON, LOUISIANA, ASSIGNOR OF ONE-HALF TO WALTER C. SNODGRASS, OF THOMASVILLE, GEORGIA.

COTTON-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 785,383, dated March 21, 1905.

Application filed February 9, 1903. Serial No. 142,598.

To all whom it may concern:

Be it known that I, ARTHUR T. SNODGRASS, a citizen of the United States, residing at Patterson, in the parish of St. Mary and State of Louisiana, have invented certain new and useful Improvements in Cotton-Compressors, of which the following is a specification.

My invention relates to that class of compressors in which a movable platen is operated by means of links in connection with a system of toggle-levers which in turn are operated by means of a piston-rod attached to a piston which reciprocates in a vertical cylinder.

In many of the compressors now in use their construction is such that a very high and strong housing or frame is necessary. There is also a heavy outward or breaking strain exerted near the top and outer ends of these housings. This heavy strain coming in an outward direction does not exert itself directly on the bale which is to be compressed, but in reality creates resistance to the upward motion of the moving parts of the compressor, thus making it necessary to use a very large and powerful steam-cylinder to overcome the resistance caused by these levers in connection with the power necessary to compress the bale which is being compressed.

The objects of my invention are, first, to provide a compressor in which all strains are at or near the bottom; second, to so arrange all levers and toggle-joints in such a manner that all strains will be exerted directly in the direction which will develop the most power to the upward motion of the movable platen; third, to construct a compressor whose leverage is so arranged as to develop the required power (say two thousand tons) through the means of a comparatively small actuating-cylinder.

My improvements are shown in the accompanying drawings and are hereinafter more particularly described and claimed.

In the accompanying drawings, Figure 1 is an end elevation of a compressor which embodies my improvements. Fig. 2 is a vertical central section of the same, the full or

solid lines showing the compressor in down or open position for reception of the bale and the dotted lines showing the parts at the completion of the compression-stroke. Fig. 3 is a central vertical section showing the swinging levers in the position of greatest efficiency.

In Figs. 2 and 3 the main frame or housing of the compressor is designated by *a*. The upper platen 30 may be either cast as a part of this main frame or housing or it may be cast as a separate piece and attached to same by means of bolts or in any other manner which may be desired. On the upper side and near the end of the upper platen it is curved out, so as to receive the rounded ends of the fulcrum-levers *H H*. The upper ends of these fulcrum-levers are also cylindrical in order to give a perfect bearing for the curved ends of the main links 5 5. These main links have no bearings on pins, but are curved out, so as to form perfect bearings on the rounded ends of both the fulcrum-levers and the rounded ends of the lower or movable platen. By this arrangement all shearing strains on pins are prevented.

The main levers *b b* are attached to the main frame or housing at the points 20, 20, which are near the top of the top platen and very near the center of the compressor laterally, thus avoiding the necessity of a high and heavy housing. The point at which the levers *b b* are attached to the housing is lower than the upper ends of the fulcrum-levers when they are in an upright position.

At the points 23, 23 on levers *b b* are attached the swinging levers 22, 22, the upper ends of which are attached to the projections 31, 31 on fulcrum-levers. At the points 12, 12 are attached the pulling-rods *E E*, which in turn are attached to the piston-rod 8 by means of cross-head 26. This cross-head may be formed in any manner which may be found most convenient.

24, 24 are posts for the support of the compressor and may be made of wood or any other material which is most convenient.

16, 16 are bumpers made of any elastic material, which are designed to prevent any jar

on the machinery should at any time the fulcrum-levers be forced together, as shown by dotted lines, Fig. 2.

4 4 are guides designed to prevent any swinging motion in the lower platen.

In operating steam is admitted into the cylinder 10 through pipe 11. This operating upon the piston 9 causes it to rise, thus imparting motion to all the movable parts of the machine. When strain is brought to bear upon the levers *b b*, they rise, and the points 12 12 take the directions of the dotted lines shown in Fig. 3, and when the points 12 reach a horizontal line 17 (see Fig. 3) drawn through the axes 20 of levers *b b* the latter have their greatest power, since the tractive force is then applied at points farthest laterally or horizontally from the fulcra 20 of the levers, as indicated by dotted curved lines in Fig. 3. After passing the points 17 the effective leverage decreases, since the pushing-bars 22 are then swinging inward from a vertical position, and thus their power increases at practically the same ratio as the levers *b b* are losing power. In this manner an almost even pressure is obtained upon the fulcrum-levers. It will be seen that in the first portion of the stroke of the movable platen (see Fig. 2) the travel of fulcrum-levers *H*, links 5, and lower platen *a'* will be greatly in excess of the travel of the piston, thus making the compressor very quick before the material which is being compressed has reached any great density. Toward the latter part of the stroke (see Fig. 2) the travel of the piston is greatly in excess of the travel of the platen, thus giving to the machine a slow and powerful motion at the time of the greatest strain.

It is to be understood that I do not desire to be limited to the precise construction herein described, but that changes may be made within the principles of construction indicated.

I claim—

1. In a compound-lever press, the combination with the frame, cylinder, sliding piston, cross-head, and movable and fixed platen, of traction-links connecting said cross-head with main levers, of main levers, of pushing-bars connecting main levers with perpendicular projections of fulcrum-levers, of fulcrum-levers having perpendicular projections and pivoted at their inner end to the frame and connected at their outer end by main traction-links to the movable platen, substantially as shown and described.

2. In a press, the combination, with the frame, the slidable piston, the platens, fulcrum-

levers, and main traction-links connecting the said levers with the movable platen, of the main levers pivoted above the fulcrum-levers and below the points reached by the free ends of the latter when raised to vertical position, and means operatively connecting the outer ends of the main levers with the piston, substantially as described.

3. In a press, the combination, with the frame, the sliding piston, the platen, fulcrum-levers, and main traction-links connecting the said levers with the movable platen, of the main levers pivoted to the frame at a point above the fulcrum-levers when they are in a horizontal position and below the upper end of said fulcrum-levers when they are raised to a vertical position, of the pushing-bar connecting the said main levers with the fulcrum-levers, substantially as described.

4. In a press, the combination, with the frame, fixed platen, cylinder, slidable piston, and cross-head, movable platen and main traction-links, of fulcrum-levers having upward projections intermediate their ends, the main levers, pushing-bars pivoted at their respective ends to the main levers and said projections of the fulcrum-levers, and pulling-rods connecting the main levers and cross-head, substantially as described.

5. In a press, the combination, with the frame, the fixed and movable platens, fulcrum-levers having lateral arms or projections, traction-links connecting said levers with the movable platen, the main levers pivoted to the frame, and means for applying upward traction to their outer ends, pushing-bars connecting the said fulcrum and main levers, the said arms of the fulcrum-levers having parts extended beyond their pivots to form abutting or cushion portions when the movable platen is at the highest point of its stroke, substantially as described.

6. In a press of the character indicated, the combination, with frame, the fixed platen, the movable platen, and fulcrum-levers having rounded or cylindrical ends, of lifting-links having their ends made concave to conform to the ends of the said platen and levers, and the main levers, and means for applying upward traction to the main levers, as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR T. SNODGRASS.

Witnesses:

LOUIS B. HYMEL,
ANTHONY G. PIERI.